

AMENDMENTS TO THE CLAIMS

Claims 1 – 8. (Cancelled)

9. (Previously Presented) A nitride-based semiconductor laser device comprising:
a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;
an n-type cladding layer formed on said substrate;
an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;
a p-type cladding layer formed on said active layer; and
a light guide layer formed only between said active layer and said p-type cladding layer,
wherein

said p-type cladding layer includes a p-type cladding layer consisting of a nitride-based semiconductor having a lattice constant smaller than the lattice constant of GaN, and

said light guide layer is constituted of a nitride-based semiconductor having a lattice constant larger than the lattice constant of GaN.

10. (Original) The nitride-based semiconductor laser device according to claim 9,
wherein

said light guide layer consists of InGaN.

11. (Cancelled)

12. (Previously Presented) A nitride-based semiconductor laser device comprising:

a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;

an n-type cladding layer formed on said substrate;

an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;

a p-type cladding layer formed on said active layer;

a light guide layer formed only between said active layer and said p-type cladding layer;

and

an n-type carrier blocking layer, formed between said n-type cladding layer and said active layer, consisting of a nitride-based semiconductor having a refractive index smaller than the refractive index of said n-type cladding layer.

13. (Original) The nitride-based semiconductor laser device according to claim 12, wherein

said n-type cladding layer includes an n-type cladding layer consisting of AlGa_N having a first Al composition ratio, and

said n-type carrier blocking layer includes an n-type carrier blocking layer consisting of AlGa_N having a second Al composition ratio larger than said first Al composition ratio.

14. (Previously Presented) A nitride-based semiconductor laser device comprising:

a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;

an n-type cladding layer formed on said substrate;
an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;
a p-type cladding layer formed on said active layer;
a light guide layer formed only between said active layer and said p-type cladding layer;
and
an n-type carrier blocking layer, formed between said n-type cladding layer and said active layer, consisting of a nitride-based semiconductor having a band gap larger than the band gap of said n-type cladding layer and the band gap of said active layer.

15. (Original) The nitride-based semiconductor laser device according to claim 14, wherein

said n-type cladding layer includes an n-type cladding layer consisting of AlGa_N having a first Al composition ratio while said active layer includes an active layer consisting of InGa_N, and

said n-type carrier blocking layer includes an n-type carrier blocking layer consisting of AlGa_N having a second Al composition ratio larger than said first Al composition ratio.

16. (Cancelled)

17. (Previously Presented) A nitride-based semiconductor laser device comprising:
a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;

an n-type cladding layer formed on said substrate;
an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;
a p-type cladding layer formed on said active layer;
a light guide layer formed only between said active layer and said p-type cladding layer;
and
an impurity introduction layer formed on a region of said p-type cladding layer other than on a current path part of said p-type cladding layer, wherein
said impurity introduction layer is an ion implantation layer.

18. (Currently Amended) A nitride-based semiconductor laser device comprising:
a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;
an n-type cladding layer formed on said substrate;
an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;
a p-type cladding layer formed on said active layer;
a light guide layer formed only between said active layer and said p-type cladding layer;
and
an impurity introduction layer formed on a region of said p-type cladding layer other than on a current path part of said p-type cladding layer ~~The nitride-based semiconductor laser device according to claim 16 , wherein~~

a distance between the emission layer including the active layer and the substrate is within the range of about 0.5 μm to about 4 μm .

said impurity includes carbon, and

the maximum value of the impurity concentration of carbon in said impurity introduction layer is about $5 \times 10^{19} \text{ cm}^{-3}$ or greater.

19. (Cancelled)

20. (Previously Presented) A nitride-based semiconductor laser device comprising:

a substrate consisting of either a nitride-based semiconductor doped with an impurity or a boride-based material;

an n-type cladding layer formed on said substrate;

an active layer consisting of a nitride-based semiconductor formed on said n-type cladding layer;

a p-type cladding layer formed on said active layer;

a light guide layer formed only between said active layer and said p-type cladding layer;

and an undoped p-side contact layer formed on said p-type cladding layer, wherein

said active layer includes an active layer of a quantum well structure consisting of a nitride-based semiconductor containing In, and

said undoped p-side contact layer has a thickness smaller than the thickness of a quantum well layer of said active layer and an In composition ratio smaller than the In composition ratio of said quantum well layer.

21. (Previously Presented) The nitride-based semiconductor laser device according to claim 20, wherein

the thickness of said undoped p-side contact layer is about 3 nm and not more than 5 nm.

22. (Previously Presented) The nitride-based semiconductor laser device according to claim 20, wherein

the difference between the In composition ratio of said undoped p-side contact layer and the In composition ratio of said quantum well layer of said active layer is 0.05 or greater.